

REMARKS

Reconsideration is respectfully requested.

The Examiner's rejections will be considered in the order of their occurrence in the Office Action.

Part 1 of the Office Action

Claims 1 through 16, 19, 21 through 23, 28, 29 and 39 through 43 have been rejected under 35 U.S.C. §112 (second paragraph) as being indefinite.

Claim 43 has been cancelled.

The above amendments to claims 8, 19, 21, 28 and 39 are believed to clarify the requirements of the rejected claims, especially the particular points identified in the Office Action.

However, with respect to the rejections based upon the recitation in claim 1 of "sufficient depth penetration", it is noted that the Manual of Patent Examining Procedure (MPEP) states at §2173.02 (underlined emphasis in original, italicized emphasis added):

2173.02 Clarity and Precision

The examiner's focus during examination of claims for compliance with the requirement for definiteness of 35 U.S.C. 112, second paragraph is whether the claim meets the threshold requirements of clarity and precision, not whether more suitable language or modes of expression are available. When the examiner is satisfied that patentable subject matter is disclosed, and it is apparent to the examiner that the claims are directed to such patentable subject matter, he or she should allow claims which define the patentable subject matter with a reasonable degree of particularity and distinctness. Some latitude in the manner of expression and the aptness of terms should be permitted even though the claim language is not as precise as the examiner might desire. Examiners are encouraged to suggest claim language to

applicants to improve the clarity or precision of the language used, but should not reject claims or insist on their own preferences if other modes of expression selected by applicants satisfy the statutory requirement.

The essential inquiry pertaining to this requirement is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity. *Definiteness of claim language must be analyzed, not in a vacuum, but in light of:*

- (A) *The content of the particular application disclosure;*
- (B) The teachings of the prior art; and
- (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.

It is submitted that the claims including the terminology objected to in the Office Action define the invention with a reasonable degree of clarity and particularity, especially in light of the applicant's disclosure of the invention, and that one possessing an ordinary level of skill in the pertinent art, would be able to understand the scope of the invention defined by the claim.

For example, on page 21, lines 5 through 21 of the applicant's specification, the following exemplary guidelines are disclosed with respect to "sufficient depth penetration" of the mixture:

After an application of the mixture, the extent of penetration of the mixture, or more importantly the penetration of the PAM polymer of the mixture, below the top surface of the soil of the land area is tested by examining the soil below the top surface of the soil, such as by, for example, by removing a core sample of the soil from the land area. The application of the mixture is preferably continued until the PAM reaches sufficient depth penetration. For example, for slope categories between substantially level and 4 to 1, inclusive, sufficient depth penetration may be a minimum of about 1.3 inches. For general slopes of about 3 to 1, sufficient depth penetration may be a minimum of about 1.5 inches. For general slopes of about 2 to 1, sufficient depth penetration may be a minimum of about 2 inches. For general slopes of about 1.5 to 1, sufficient depth penetration may be a

minimum of about 2.5 inches. For general slopes is about 1 to 1 or steeper, sufficient depth penetration may be a minimum of about 3 inches.

It is therefore believed that the “sufficient depth penetration” terminology of claim 1 is not indefinite when considered in light of the factors identified in MPEP §2173.02.

Withdrawal of the §112 rejection of claims 1 through 16, 19, 21 through 23, 28, 29 and 39 through 42 is therefore respectfully requested.

Parts 2 and 3 of the Office Action

Claims 39 through 43 have been rejected under 35 U.S.C. §102(b) as being anticipated by Lahalih, Dolfing et al., Hashimoto et al., Hessert et al., Hosoda et al., Helbling, Clark, Wallace et al., Libor et al., Hughes, Mortvedt et al., Bramwell, Darr, Chamberlain, Behel, Jr. et al., ‘799, Salestrom, Dunning et al., Hansen ‘123, Behel, Jr. et al. ‘029, or Davies et al.

Claims 39 through 43 have been rejected under 35 U.S.C. §102(e) as being anticipated by Komatsu et al., Hansen ‘869, Salestrom or Arnold et al.

Claim 43 has been cancelled.

Claim 39 has been amended to further clarify that the step of “applying the mixture to a top surface of soil of the land area” includes applying the mixture “until the soil of the land area becomes saturated”, and also includes “stopping the application of the mixture when the top surface becomes saturated and the mixture accumulates on the surface rather than being absorbed into the ground and the mixture on the top surface reflects ambient light”.

It is submitted that the references relied upon in the rejections of the Office Action would not lead one of ordinary skill in the art to the claimed invention as defined in claim 39, particularly as amended, and therefore claim 39, as well as claims 40 through 42 which depend from claim 39, are in condition for allowance.

Withdrawal of the §102(b) and §102(e) rejections of claims 39 through 42 is therefore respectfully requested.

Part 4 of the Office Action:

Claims 1 through 16 have been indicated as being allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in the Office Action.

It is submitted that in view of the remarks above regarding the terminology of claim 1 with respect to the §112 rejection, that claims 1 through 16 are in condition for allowance.

Part 5 of the Office Action:

Claims 19, 21 through 23, 28 and 29 have also been indicated as being allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in the Office Action.

In light of the amendments to these claims and their dependency from allowed claim 17, it is submitted that claims 19, 21 through 23, 28, and 29 are in condition for allowance.

Paragraph 16 of the Office Action:

Claims 17, 18, 20, 24 through 27, 30 and 31 have been allowed.

VERSION WITH MARKINGS TO SHOW CHANGES MADE:

In the Specification (bracketed parts deleted and underlined parts added):

In the paragraph beginning on page 9, line 16:

A land area to be treated is covered by a layer of soil particles that may extend to various depths below the upper surface of the land area. The invention is highly suitable for use on land areas where the soil has been recently moved or positioned, such as, for example, a golf course during or just after the final contour grading preparations, and before any significant turf growth has been established, although application with even a significant amount of turf growth is possible and useful. It is at the time before turf establishment that the soil of the land area is most vulnerable to erosion by wind and precipitation, and also is the time when the soil is being subjected to extensive watering for establishing turf on the land area. It should be noted that the land area, as referred to herein, may comprise an area of a few square yards, such as in the case of a putting green, up to several acres, such as in the case of fairways or fairway boundary areas. A particular land area for the purpose of PAM treatment using the invention is generally defined by a number of factors, such as, for example, the type or composition of the soil, and the average [of] or general slope of the top surface of the soil. A large area, such as a golf course, may be subdivided into several smaller sections of land area.

In the paragraph beginning on page 12, line 5:

A liquid is introduced into each of the first and second trays. A first liquid is introduced into the [upper most] uppermost end of the first tray, and a second liquid is introduced into the uppermost end of the second tray. The first liquid comprises water, preferably without any significant levels of other substances. The second

liquid comprises a mixture of PAM and water. The mixture of the second liquid preferably comprises about 1000 parts water to about 1 part PAM, which generally corresponds to the mixture preferably applied to soil having a general slope of about 3 to 1.

In the Claims (bracketed parts deleted and underlined parts added):

1. (Pending) A method of applying polyacrylamide (PAM) for stabilizing soil particles of a land area from erosive movement about the land area, the method comprising;
establishing a uniform mixture ratio for a mixture of PAM and water to be applied to a land area;
calculating a total application rate for applying the mixture to the land area;
mixing PAM with water according to the uniform mixture ratio to form a mixture for application to the land area;
applying the mixture to a top surface of soil of the land area; and
terminating the application of the mixture when PAM reaches sufficient depth penetration below a top surface of the soil.
2. (Pending) The method of claim 1 wherein the establishing step includes mixing PAM and water in a ratio of about 1 part PAM to between about 500 and about 5000 parts water by volume.
3. (Pending) The method of claim 1 wherein the establishing step includes mixing PAM and water in a ratio of 1 part PAM to about 1000 parts water by volume.
4. (Pending) The method of claim 1 additionally comprising the step of determining a number of times that the mixture of the uniform mixture ratio needs to be applied to the land area to achieve the calculated total application rate of the PAM.

5. (Pending) The method of claim 1 wherein the applying step comprises making a series of applications of the mixture to the surface for a number of times until the application rate for the soil of the land area is achieved.

6. (Pending) The method of claim 1 wherein the applying step includes misting a portion of the total application rate of the mixture onto the surface of the land area to produce a tack coat for initially stabilizing topmost soil particles on the top surface of the land area against soil particle movement caused by subsequent mixture applications.

7. (Pending) The method of claim 1 wherein the applying step includes continuing to apply the mixture to the surface of the soil until the soil of the land area becomes saturated and stopping the application of the mixture top surface becomes saturated.

8. (Amended) The method of claim 7 additionally comprising detecting saturation of the soil when the mixture [appears to be accumulating] accumulates on the surface rather than being [relatively quickly] absorbed into the ground and the mixture on the top surface [appears to reflect] reflects ambient light.

9. (Pending) The method of claim 8 wherein the applying step includes waiting for a time period after detection of saturation such that the mixture is able to penetrate the ground below the surface, wherein the time period comprises the time required for any puddles of the mixture on the top surface of the soil to be absorbed into the soil below the top surface.

10. (Pending) The method of claim 9 wherein the waiting step is conducted for a time period that is less than the time required for the top surface of the soil to dry.

11. (Pending) The method of claim 1 wherein the applying step includes the step of directing a spray of the mixture onto the top surface of the soil of the land area from at least four directions, each of the directions being oriented at about 90 degrees to at least two of the other directions.

12. (Pending) The method of claim 11 wherein the applying step includes the step of directing a spray of the mixture at a substantially perpendicular angle downward onto the top surface of the soil of the land area, wherein the direction of the substantially perpendicular spray varies less than about 15 degrees measured from an axis perpendicular to the surface of the soil.

13. (Pending) The method of claim 1 additionally comprising testing the extent of penetration of the PAM below the top surface of the soil of the land area.

14. (Pending) The method of claim 1 wherein the testing step includes removing a core sample of the soil from the land area.

15. (Pending) The method of claim 1 additionally comprising the step of comparing the depth penetration of the PAM below the top surface of the soil of the land area to a set of minimum depth penetration values based upon the general slope of the land area to determine the minimum depth penetration needed for the land area being treated before terminating application of the mixture to the land area;

wherein if the general slope of the land area is between substantially level and a general slope of 4 to 1, inclusive, the sufficient depth penetration is a minimum of about 1.3 inches;

wherein if the general slope of the land area is about 3 to 1, the sufficient depth penetration is a minimum of about 1.5 inches;

wherein if the general slope of the land area is about 2 to 1, the sufficient depth penetration is a minimum of about 2 inches;

wherein if the general slope of the land area is about 1.5 to 1, the sufficient depth penetration is a minimum of about 2.5 inches; and

wherein if the general slope of the land area is about 1 to 1 or steeper, the sufficient depth penetration is a minimum of about 3 inches.

16. (Pending) The method of claim 15 additionally comprising exceeding the total application rate calculated if the sufficient minimum depth penetration is not achieved through application of mixture to the soil at the total application rate.

17. (Allowed) A method of applying polyacrylamide (PAM) for stabilizing soil particles of a land area from erosive movement about the land area, the method comprising; establishing a uniform mixture ratio for a mixture of PAM and water to be applied to a land area; calculating a total application rate for applying the mixture to the land area; mixing PAM with water according to the uniform mixture ratio to form a mixture for application to the land area; and applying the mixture to a top surface of soil of the land area by misting a top surface of the land area with the mixture for producing a tack coat of the PAM for initially stabilizing topmost soil particles on the top surface of the land area against soil particle movement caused by any subsequent mixture applications.

18. (Allowed) The method of claim 17 additionally comprising the step of determining a number of times that the

mixture of the uniform mixture ratio needs to be applied to the land area to achieve the calculated total application rate of the PAM.

19. (Amended) The method of claim 18 wherein the applying step comprises making a series of applications of the mixture to the soil according to the number of times determined to [achieving] achieve the total application rate for the soil of the land area [using the is achieved].

20. (Allowed) The method of claim 17 wherein the applying step includes continuing to apply the mixture to the surface of the soil until the soil of the land area becomes saturated and stopping the application of the mixture top surface becomes saturated.

21. (Amended) The method of claim 20 additionally comprising detecting saturation of the soil when the mixture [appears to be accumulating] accumulates on the surface rather than being [relatively quickly] absorbed into the ground and the mixture on the top surface [appears to reflect] reflects ambient light.

22. (Pending) The method of claim 21 wherein the applying step includes waiting for a time period after detection of saturation such that the mixture is able to penetrate the ground below the surface, wherein the time period comprises the time required for any puddles of the mixture on the top surface of the soil to be absorbed into the soil below the top surface.

23. (Pending) The method of claim 22 wherein the waiting step is conducted for a time period that is less than the time required for the top surface of the soil to dry.

24. (Allowed) The method of claim 17 wherein the applying step includes the step of directing a spray of the mixture onto the

top surface of the soil of the land area from at least four directions, each of the directions being oriented at about 90 degrees to at least two of the other directions.

25. (Allowed) The method of claim 17 wherein the applying step includes the step of directing a spray of the mixture at a substantially perpendicular angle downward onto the top surface of the soil of the land area, wherein the direction of the substantially perpendicular spray varies less than about 15 degrees measured from an axis perpendicular to the surface of the soil.

26. (Allowed) The method of claim 17 additionally comprising testing the extent of penetration of the PAM below the top surface of the soil of the land area.

27. (Allowed) The method of claim 17 wherein the testing step includes removing a core sample of the soil from the land area.

28. (Amended) The method of claim 17 additionally comprising the step of terminating the application of the mixture when PAM [reaches sufficient depth penetration] penetrates below a top surface of the soil.

29. (Pending) The method of claim 28 additionally comprising comparing the depth penetration of the PAM below the top surface of the soil of the land area to a set of minimum depth penetration values based upon the general slope of the land area to determine the minimum depth penetration needed for the land area being treated before terminating application of the mixture to the land area;

wherein if the general slope of the land area is between substantially level and a general slope of 4 to 1, inclusive, the sufficient depth penetration is a minimum of about 1.3 inches;

wherein if the general slope of the land area is about 3 to 1, the sufficient depth penetration is a minimum of about 1.5 inches;

wherein if the general slope of the land area is about 2 to 1, the sufficient depth penetration is a minimum of about 2 inches;

wherein if the general slope of the land area is about 1.5 to 1, the sufficient depth penetration is a minimum of about 2.5 inches; and

wherein if the general slope of the land area is about 1 to 1 or steeper, the sufficient depth penetration is a minimum of about 3 inches.

30. (Allowed) The method of claim 17 wherein the establishing step includes mixing PAM and water in a ratio of about 1 part PAM to between about 500 and about 5000 parts water by volume.

31. (Allowed) The method of claim 17 additionally comprising the step of considering the relative compaction of the soil of the land area, and increasing a number of times of applications of the mixture if the top surface of the soil of the land area has a compacted crust for loosening the compaction of the soil to enhance the penetration of subsequent applications of the mixture into the soil.

Claims 32 through 38 of the application have been previously cancelled in the Examiner's Amendment, without prejudice.

39. (Amended) A method of applying polyacrylamide (PAM) for stabilizing soil particles of a land area from erosive movement about the land area, the method comprising; mixing PAM with water to form a mixture for application to the land area;

applying the mixture to a top surface of soil of the land area until the soil of the land area becomes saturated, and stopping the application of the mixture when the top surface becomes saturated and the mixture accumulates on the surface rather than being absorbed into the ground and the mixture on the top surface reflects ambient light; and

terminating the application of the mixture when PAM [reaches sufficient depth penetration] penetrates below a top surface of the soil.

40. (Pending) The method of claim 39 additionally comprising the step of establishing a uniform mixture ratio for a mixture of PAM and water to be applied to a land area, and wherein the mixture formed by the mixing step has a ratio of PAM and water corresponding to the uniform mixture ratio.

41. (Pending) The method of claim 40 additionally comprising the step of calculating a total application rate for applying the mixture to the land area, and additionally comprising the step of determining a number of times that the mixture of the uniform mixture ratio needs to be applied to the land area to achieve the calculated total application rate of the PAM.

42. (Pending) The method of claim 39 additionally comprising the step of calculating a total application rate for applying the mixture to the land area, and wherein the applying step comprises making a series of applications of the mixture to the surface for a number of times until the application rate for the soil of the land area is achieved.

Cancel claim 43.

CONCLUSION

In light of the foregoing amendments and remarks, early reconsideration and allowance of this application are most courteously solicited.

Respectfully submitted,


Ivar M. Kaardal (Reg. No. 29,812)
KAARDAL & ASSOCIATES, P.C.
3500 South First Avenue Circle, Suite 250
Sioux Falls, SD 57105-5802
(605)336-9446 FAX (605)336-1931
e-mail patent@kaardal.com

Date: 11/21/03